CEMENT MILL SECTION of Concrete

The Cement Mill Edition of Concrete is edited exclusively for those interested in the manufacture of portland cement. Its pages are devoted to discussions of plant design, management, operation, production efficiency, chemical research and control, quarry operation, progress and news of the industry.

The Cement Mill Edition also contains all the material published in the corresponding Regular Edition and so provides news of the uses and merchandising of the materials whose manufacture is discussed in the Mill Edition. The Regular Section furnishes mill operating officials and mill executives valuable points of contact with the users of the materials they produce.

Volume 41 February, 1933 Number 2

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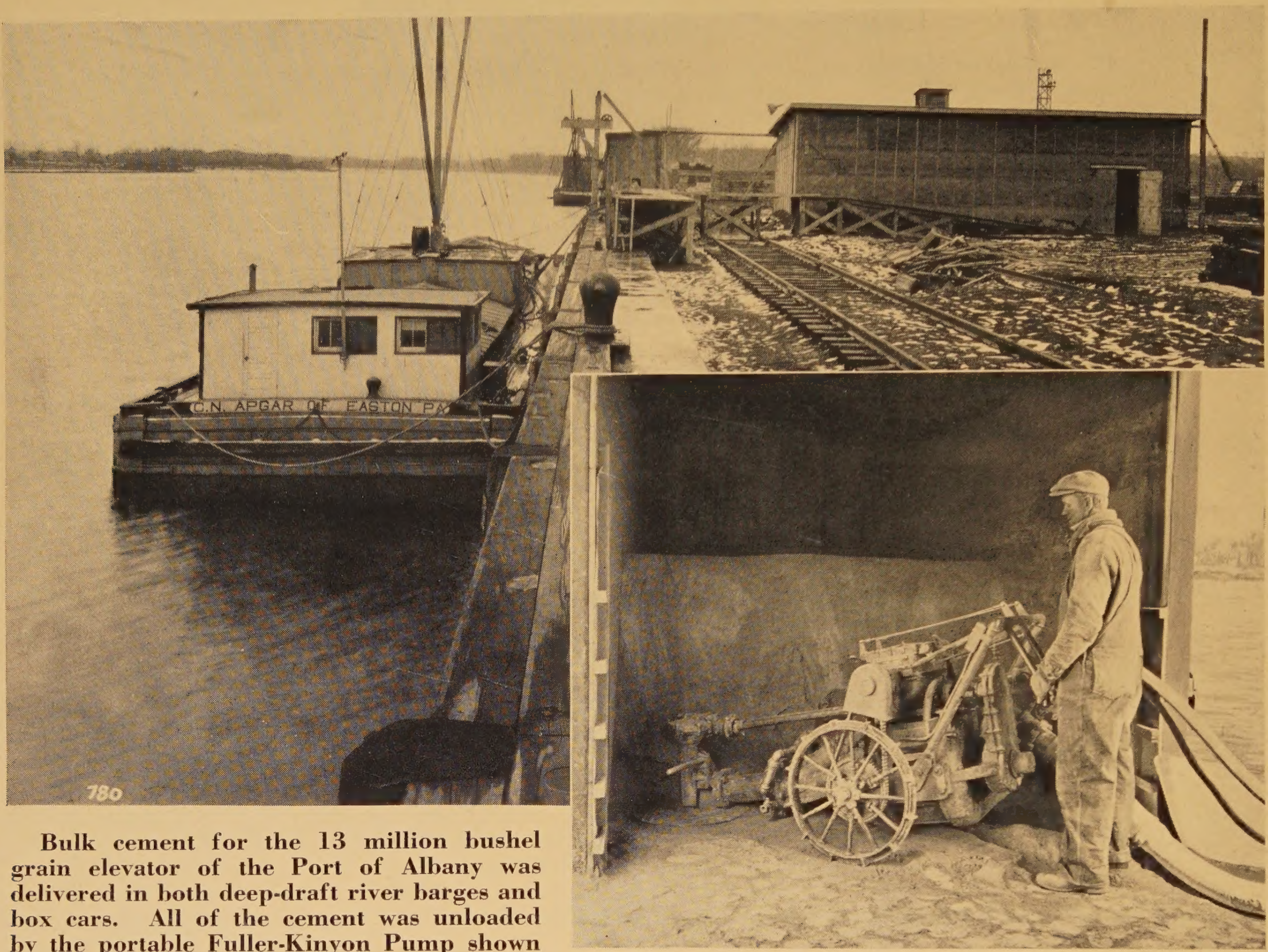
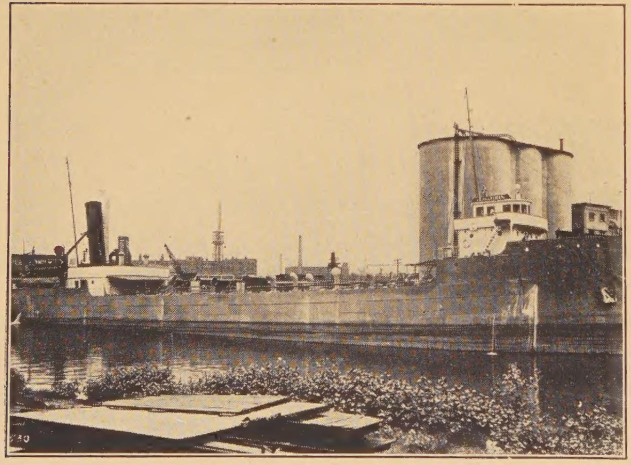
BOAT DELIVERY OF CEMENT
to Packhouses and Construction Projects



Bulk cement for the 13 million bushel grain elevator of the Port of Albany was delivered in both deep-draft river barges and box cars. All of the cement was unloaded by the portable Fuller-Kinyon Pump shown in the box car at the right. The cement was delivered direct through an underground pipe line a distance of approximately 400 feet to the mixing plant, or to the warehouse shown at the right of the upper picture. The same pump was used for recovering cement from the warehouse.



Steamer unloading cement at a silo and packhouse in a large city on the Great Lakes. This vessel is loaded and unloaded by permanently installed Fuller-Kinyon Systems.

In addition to the large number of bulk cement carriers permanently equipped with Fuller-Kinyon Systems, a great many ordinary deep-draft and deck-type barges are in service for transporting cement. These barges are used principally on the Mississippi River and its tributaries, the Hudson River and waters in and adjacent to New York Harbor.

Portable Fuller-Kinyon Pumps of the type shown above are employed for unloading the cement and transferring it to silos and warehouses, and also to mixer bins on construction projects.

The Portable Fuller-Kinyon Pump is the only conveyor capable of unloading barges and recovering from warehouse storage. The upper illustration suggests a simple terminal warehouse and packing plant for inland waterways.

Let us send you complete information on bulk cement carriers and our bulletin illustrating the use of portable pumps and unloading barges.

Fuller Company
CATASAUQUA, PENNA. U. S. A.

Inland Waterways Offer Big Saving to Cement Industry

Detailed Cost Analysis Shows Economy of Barge Transportation—Loading and Unloading Facilities—Cement Companies Have Preference for Company-Owned Fleets

By JACOB A. HARMAN
Jacob A. Harman, Inc., Engineers, Peoria, Illinois

THE opening of the navigation season of 1933 will see the realization of a dream of many years, for the final link at the upper end of the waterway from the Great Lakes to the Gulf of Mexico will be put into service.

This final link, known as the Illinois Waterway and extending from Chicago to Starved Rock, on the Illinois River, is rapidly nearing completion and should be ready for use at the opening of the season. Certain fixed bridges between Chicago and Joliet, having a headroom of only 15 ft., will to some extent hamper the operation of towboats, but will not be a serious handicap, since special towboats designed for low headroom will operate in that end of the channel.

Means Much to Cement Industry

The completion of the lakes-to-gulf waterway has aroused much public interest in inland waterway transportation, and it has also prompted many Mississippi Valley leaders of industry and commerce to consider how they might utilize this and other inland water routes as a means of reducing transportation costs and extending their trade areas.

It is probable that bulk commodities, such as coal, grain, sand, gravel, lime, and cement will constitute the greater part of the tonnage on inland waterways, for the barge method of transportation is especially well adapted for the shipment of such commodities.

What this means to the portland cement industry may be visualized from the fact that some thirty cement manufacturing plants are located on the Mississippi River and its principal tributaries alone. On the Great Lakes and the St. Lawrence River there are twenty-one cement plants located in positions to utilize water transportation, while still others are similarly located on the Gulf coast and on the Atlantic and Pacific seaboards.

Much Cement Shipped by Water

Many of these cement plants are now using water transportation, but others are not. Several cement companies with plants on the Great Lakes and the St. Lawrence River are using large self-unloading cement carriers. On the Atlantic seaboard one company is using lighters for transporting railway cars designed especially for carrying bulk cement. Still others are utilizing ordinary barges and towboats, some carrying cement in sacks and others in bulk. Cement in bulk may be loaded and unloaded by Fuller-Kinyon pumps.

Marquette Cement Company's Experience

A notable example of the use of a towboat and barges for transporting portland cement in bulk is that of the Marquette Cement Manufacturing Co. As this article will be confined largely to a consideration of this form of transportation, a brief review of what the Marquette company has accomplished will be of interest. This company owns two cement manufacturing plants, one at Oglesby,

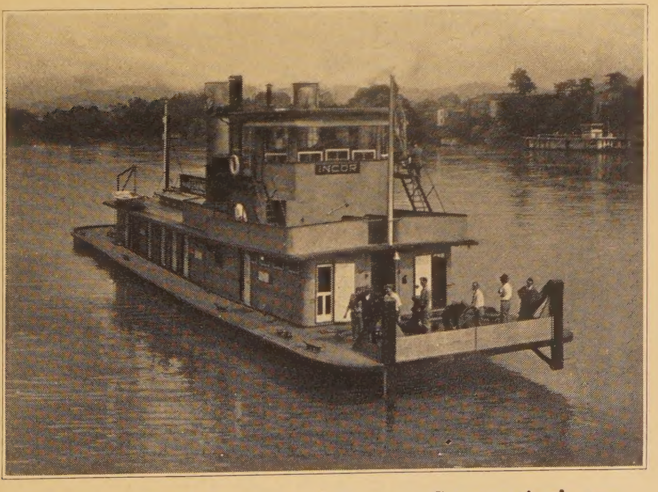


Figure 1. The International Cement Corporation's towboat *Incor*, equipped with a 720-hp. Diesel engine. Towing capacity, 3,500 net tons

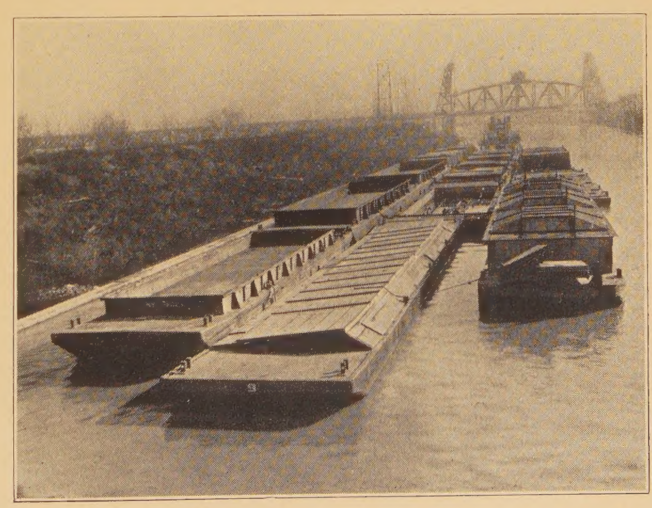


Figure 2. Typical fleet of river barges, towed by the *Duncan Bruce*, a Diesel-powered boat

Ill., on the Illinois River, and one at Cape Girardeau, Mo., on the Mississippi River between St. Louis and Memphis. The company has built large cement storage terminals on the Mississippi at St. Louis and Memphis, for distribution to customers in those areas.

Beginning with 1929 this cement company has operated four company-owned barges, and the steel towboat *William Dickinson.* The four barges are identical, 175 ft. long by a 35-ft. beam, equipped with individual unloading conveyor piping and pump. Each barge has a capacity of 5,000 bbl. (940 tons) of cement in bulk. A crew of 12 men is employed.

The company's loading facilities at Peru, Ill., on the Illinois River near the Oglesby plant, were reported by newspapers to have cost $10,000. These loading facilities consist of an installation by means of which the cement is elevated from freight cars to a level about 35 ft. above the railway tracks, from where carriers convey it over a steel bridge to the barges at the dock. The equipment handles about 400 bbl. an hour. The railway freight cars mentioned bring the cement from the plant about 3 miles away.

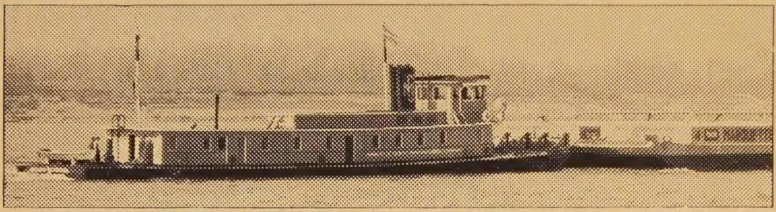


Figure 3. The steel towboat *William Dickinson*, owned and operated by the Marquette Cement Manufacturing Co.

In 1931 this company shipped a total of 69,529 tons, or 370,000 bbl., of cement by barge from its Oglesby plant, using the company-owned fleet, supplemented by the Federal Barge Lines.

The Marquette cement fleet was used in the same service during a part of the year 1932, but the tonnage figures have not been made available. Cement deliveries from the mills of the LaSalle-Peru area were also made by other barge lines during 1932.

Cost Data

For reasons that are quite obvious, cement manufacturing companies that operate their own barges do not care to give out figures, either on operating costs or on capital investment. In 1931, the writer, whose engineering organization designed and supervised the construction of the river-rail terminal at Peoria, Ill., had occasion to collect and assemble a large amount of data on the cost of transporting cement and similar bulk commodities by barge, and the following estimates are believed to be sufficiently accurate for practical purposes.

A barging outfit with towboat need not have as large a carrying capacity, nor represent as large a financial outlay, as the fleet operated by the Marquette Cement Manufacturing Co. An outfit of smaller capacity but costing probably less than half the cost of the Marquette fleet is used as the basis for the analyses that follow, and may be operated at about the same ton-mile cost.

As a basis of comparison it will be assumed that (1) the towboat and barges are operating between Chicago and St. Louis; (2) three or four round trips will be made per month during the shipping season of nine months, and (3) a load is carried in one direction.

For comparison later, it may now be stated that the shortest rail distance between these two cities is 284 miles and the waterway distance is 365 miles. The railway freight rate on portland cement is $2.90 per ton, not counting the present emergency charge, or $3.10 with the emergency charge included.

Fleet Owned by Cement Company

It is further assumed that the towboat and barges considered in these analyses are owned and operated by the cement company, although some cement companies might prefer to contract with an independent barge line to carry on these operations, to avoid making the capital investment. In this event, the transportation charges would necessarily include a profit for the contracting barge line, and would therefore be higher than if the cement company owned and operated its own barges. Where the cement company owns the barges but employs outside towing service, such towing service may not always be at hand when wanted, and a profit for the towing company must be added to the actual cost.

Number and Size of Barges

The barges considered in these analyses are each 149 ft. long, 26-ft. beam and 10 ft. deep, each barge having a capacity of approximately 3,000 bbl. of cement (560 tons).

Two cases are assumed. In one case the outfit consists of a towboat and two barges; in the other case it consists of a towboat and six barges. The advantage of the latter set-up of six barges lies in the fact that the towboat may be kept under operation a greater percentage of the time. With a towboat and six barges, two barges are always in transit, two are at the loading docks, and two are at the point of unloading. If the entire outfit includes only two barges, the towboat will, of course, always be with the barges, whether they are in transit, or being loaded or unloaded. In a word, the towboat is not usefully occupied during the loading and unloading operations, unless its power plant is used for loading and/or unloading.

For the towboat, let us consider a boat of the type of the *City of Monroe*, illustrated in service in Figure 4 and shown in mechanical detail in Figure 5. This Diesel-powered towboat is capable of towing three loaded barges of the type described above. In consequence, if the situation were such as to make it advantageous to tow three barges at a time, instead of two, that method of operation could be employed. As stated, however, it is assumed that with the 6-barge outfit only two barges are taken at a time.

The *City of Monroe* was built in 1931 by the Grafton Boat Works, Inc., Grafton, Ill., at the junction of the Illinois and Mississippi. The hull is all-steel construction. The boat has two decks and a pilot house, with accommodations for more than a dozen men, including staterooms, cabins, baths, a well-appointed dining room and a completely equipped galley.

The vessel is 86 ft. long, 21 ft. wide, draft of only 33 in. It is the sternwheel type, having two split wheels with staggered buckets. The towboat is fitted with a 210-hp.

marine Diesel engine of Fairbanks-Morse manufacture. The engine room, 12½ ft. wide and 20 ft. long, is located just forward of midships.

While the towboat is in operation the paddle wheels are direct-connected to the engine, since no running clutching arrangement is provided. Following the power transmission from the engine aft, there is first a direct connection to the propeller shaft through a disengaging flexible coupling. This permits the engine, when at rest, to be disengaged from the stern wheel; and when it is engaged this arrangement allows full flexibility between the engine and the line shaft. Aft of this coupling is the line shaft extending from the engine to the bevel gear reduction unit located in the aft end of the hull. Here another flexible coupling provides the necessary flexibility between the reduction gear and the propeller shaft.

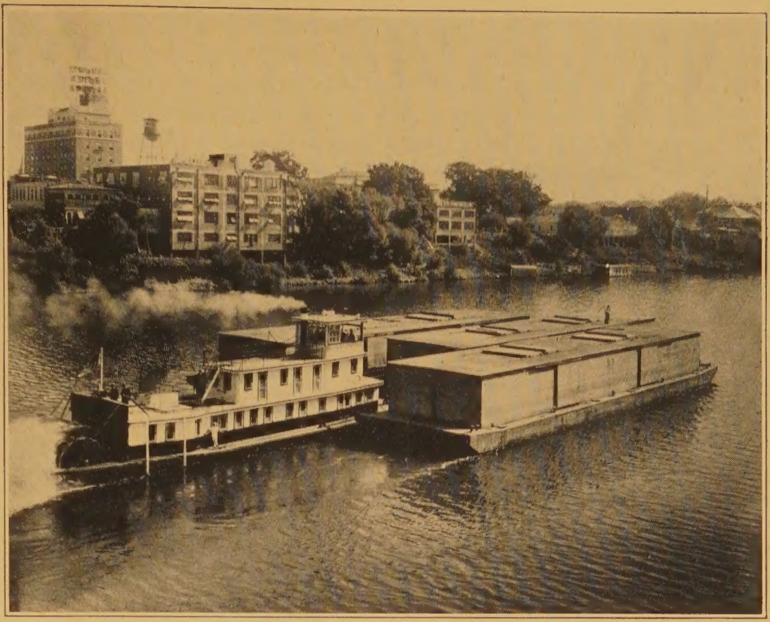


Figure 4. The 210-hp. Diesel-powered towboat *City of Monroe*, in service in lower Mississippi Valley

Cost of the Fleet; Fixed Charges

A towboat of the type just described will cost about $50,000 in round numbers, while the barges will cost about $12,500 each. The first case assumed, where the transporting equipment consists of a towboat and two barges, will represent a capital investment of $75,000 for the fleet. The second case, assuming a towboat and six barges, will require a capital outlay of $125,000.

The fixed charges involved in the operation of this equipment include depreciation, interest on investment, insurance, maintenance and taxes. For the towboat the annual fixed charges amount to 22½ per cent of the initial cost of the boat, and for the barges the corresponding fixed charges are 22 per cent, as indicated in Table 1.

TABLE 1—ANNUAL FIXED CHARGES EXPRESSED AS PERCENTAGE OF INITIAL COST

Item	Towboat	Barges
Depreciation	5 per cent	5 per cent
Interest	6 "	6 "
Insurance	6½ "	6 "
Maintenance	3 "	3 "
Taxes	2 "	2 "
	22½ "	22 "

From Table 1 it will be seen that the annual fixed charges against the towboat amount to 22½ per cent of $50,000, or $11,250. Spreading these yearly fixed charges over a period of nine months, to coincide with the actual

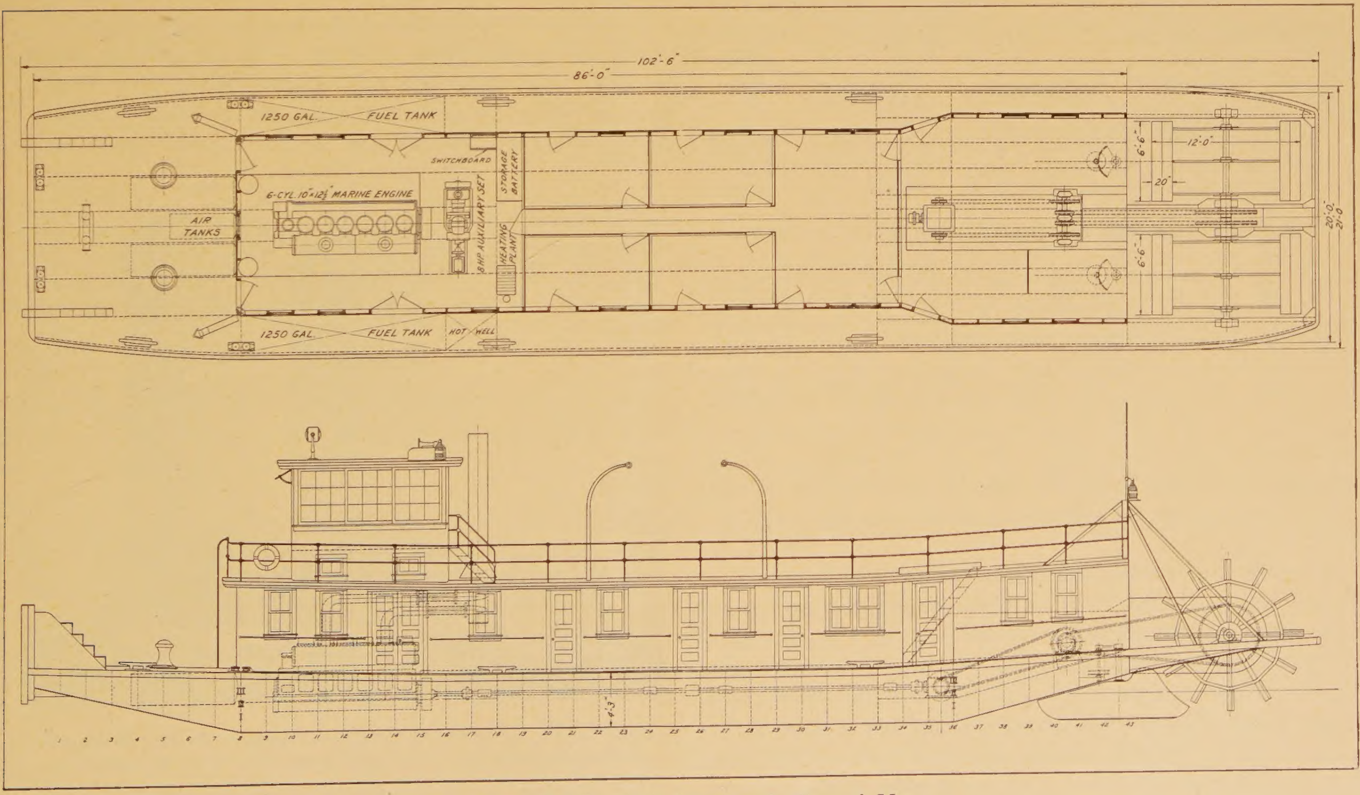


Figure 5. Mechanical details of *City of Monroe*

operating season, the monthly charges become $1,250 for the towboat.

Similarly, the annual fixed charges on the barges are 22 per cent of their initial cost, amounting to $5,500 for two barges, and $16,500 for six. Again spreading these figures over a 9-month period, the monthly fixed charges become $610 for two barges and $1,830 for six.

The total operating expense may now be estimated. In order to place the estimate in Table 2 on a monthly basis, the annual labor charges are spread over a period of nine months, to coincide with the actual operating season. Table 2 then sets forth the monthly operating expense for the two cases assumed—two barges and six barges, respectively.

Loading and Unloading Facilities

Next, assume that the cement company builds loading facilities at or near the manufacturing plant similar to the facilities provided by the Marquette Cement Manufacturing Co. at Peru, Ill., with a capacity of 400 bbl. per hour, at a cost of $10,000. The unloading facilities at the cement company's storage terminal will be provided as a part of the storage terminal development, and will be needed whether cement is received by water or by rail. Its cost of installation and operation is chargeable to the terminal and need not be considered in this estimate.

TABLE 2—MONTHLY OPERATING EXPENSE FOR TOWBOAT AND BARGES

Item	Towboat and 2 barges (1)	Towboat and 6 barges (2)
Fixed charges, towboat	$1,250	$1,250
Labor	1,230	1,230
Fuel and lubricating oil	520	620
Subsistence	200	200
Miscellaneous	80	80
Total per month for towboat	$3,280	$3,380
Fixed charges on barges	610	1,830
Total monthly operating expense	$3,890	$5,210

(1) Three trips per month, 27 trips per year with two barges.
(2) Four trips per month, 36 trips per year with two barges.

Barges with individual unloading equipment may be discharged at any point where temporary bins are provided and this gives much greater flexibility of movement and delivery. The power for unloading may be furnished from main or auxiliary power units on the towboat, or the complete unloading apparatus may be made a part of the towboat equipment so that any available barges could be used.

Depreciation on the loading facilities will be higher, perhaps as much as 20 per cent a year on some of its conveying elements, down to 5 per cent on the structural parts, with an average of 10 per cent a year, so that total fixed charges against the loading installation, including depreciation, interest, insurance, maintenance and taxes may be around 27 per cent of the initial cost, or $2,700 per year. The cost of power and lubricating oil for operating the loading facilities, plus the wages of an attendant, may bring the total cost of operating the loading facilities up to around $4,500 per year, or $500 per month when spread over a 9-month period.

The foregoing figures, added to Table 2, now show the total monthly operating expense of making shipments in the manner indicated. The figures are given in Table 3.

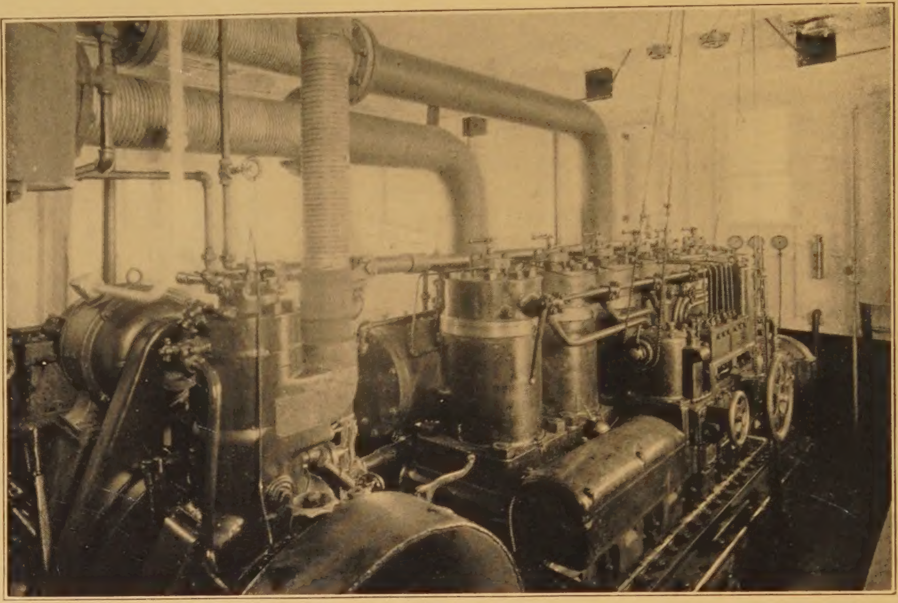


Figure 6. Engine room of *City of Monroe*

TABLE 3—TOTAL MONTHLY OPERATING EXPENSE

Item	Towboat and two barges	Towboat and six barges
Operation of towboat and barges	$3,890	$5,210
Operation of loading facilities	500	500
Total monthly operating expense	$4,390	$5,710

If operating with only two barges, the towboat probably could not average better than three round trips per month, because of the necessity of standing by during loading and unloading operations and the delays often incident to such operations. In this case the fleet would transport an

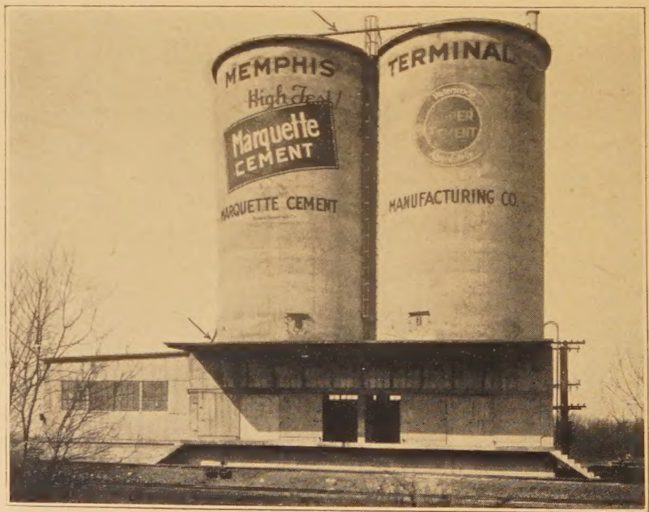


Figure 7. Reinforced concrete tanks at the Memphis storage terminal of the Marquette Cement Manufacturing Co. Fuller-Kinyon pumps deliver cement for distance of 550 ft., from river barges shown in Figure 8

average of 3,360 tons (17,870 bbl.) per month, at a cost of $4,390, or $1.31 per ton.

If operating with six barges, the towboat could average four round trips per month, transporting a monthly average of 4,480 tons (23,800 bbl.) at a cost of $5,710, or $1.27 per ton.

Cost Analysis Summarized

The cost of shipment by rail, as previously pointed out, is $2.90 per ton, exclusive of the present emergency charge of 20 cents per ton. From these figures and those previously determined, the savings are found to be as shown in Table 4.

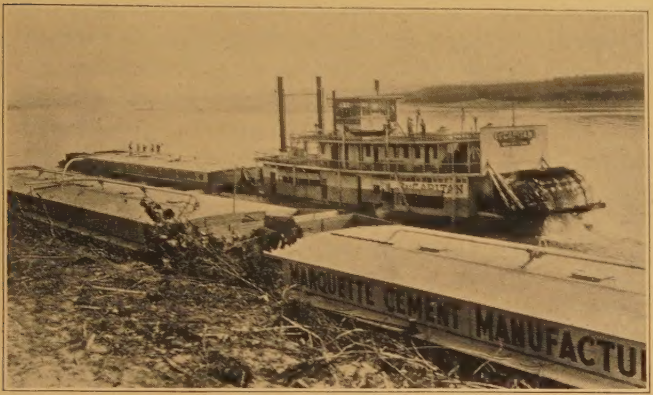


Figure 8. Barges of the Marquette Cement Manufacturing Co., operating on the Illinois and Mississippi rivers, transport cement from the company's two manufacturing plants to its storage terminals in St. Louis and Memphis

TABLE 4—SUMMARY OF RAIL AND WATER TRANSPORTATION COSTS ON CEMENT BETWEEN ST. LOUIS AND CHICAGO

Item	Towboat and two barges	Towboat and six barges
Quantity shipped per month, tons	3,360	4,480
Total monthly operating cost, by water	$4,390	$5,710
Cost per ton, by water	$1.31	$1.27
Saving per ton, compared with rail rate of $2.90 (1)	$1.59	$1.63
Saving per month	$5,340	$7,300
Saving in 9-month period	$48,060	$65,700
Total shipment in 9 months, in tons	30,240	40,320
Total shipment, expressed in barrels	160,800	214,400
Saving per barrel	$0.30	$0.31
Total investment, including loading facilities	$85,000	$135,000
Approximate time required to repay entire investment	1¾ years	2 years

(1) Rail rate here given does not include present emergency charge of 20 cents per ton.

It should be remembered that in this analysis it is assumed that the barges are empty on the return trip. It is conceivable that arrangements might be made to transport other commodities in packages or bulk on the return trip, thereby cutting the transportation cost charged against cement.

The cost per ton-mile figured on the basis of the waterway distance, is about 3½ mills. Figured on the basis of the shorter rail distance the adjusted cost per ton-mile is about 4½ mills, compared with a little more than 1 cent per ton-mile by rail.

The cement company may, as an alternative, avoid the capital investment, except perhaps for the construction of loading facilities. With the wide difference between rail rates and the actual cost of water transportation, the cement company could well afford to pay a privately owned barge line a rate sufficiently high to yield a good profit to the barge line, and still greatly reduce its shipping costs and extend its market area. Presumably the cement company, under such an arrangement, would give the barge line a 5-year to 10-year contract, in addition to providing the loading facilities at the plant and the unloading facilities at the cement storage terminal.

Company-Owned Fleets Preferred

Quite naturally, the barge line would transport other commodities on return trips, and the service schedule would not be so completely under the control of the cement company as where the manufacturing plant owns and operates the towboat and barges. Considering the present situation in the cement industry, however, it may be assumed that some cement companies would be willing to forego part of the advantages of a company-owned fleet in order to avoid the capital investment. The history of the cement industry, on the other hand, indicates a preference for company-owned fleets, for a large majority of the companies that utilize water transportation actually do own and operate the equipment.

The very low transportation costs disclosed by this analysis doubtless account for the preference toward company-owned and operated fleets.

Missouri Highway Cement Contracts Are Awarded

The Missouri state highway department late in December awarded contracts for portland cement to be used during 1933, as follows: Missouri Portland Cement Co., 501,100 bbl.; Universal Atlas, 318,800; Marquette, 278-200; Alpha, 223,200; Dewey, 62,000; Ash Grove, 62,000; Lone Star, 62,000; Hawkeye, 21,000, and Penn-Dixie, 21,000.

New York Price Advance Goes Into Effect

An average advance of 29 cents a bbl. on cement went into effect in the Greater New York territory on December 30.

The advance followed the curb put by the customs appraiser on alleged dumping of British cement and is the first in the territory in some time.

Financial Shape of Northwestern Is Reported Improved Over 1931

The Northwestern States Portland Cement Co. is in the best financial condition in its history, Col. Hanford MacNider, president and general manager, declared at the annual meeting of the corporation held at Mason City, Iowa, December 20.

"Although there has been a considerable drop in shipments the past year, the company has managed to maintain operations on a solid basis, with the result that there has been a considerable saving over the year before, placing the company in a stronger position than ever," he declared.

Officers and directors were re-elected.

Security Plant Recovers Potash from Kiln Gases

Year of Operation Demonstrates Practical Value of Installation—Cost Is Very Low

More than a year of operation has proved the practicability of recovering potash from kiln gases at the Security plant of the North American Cement Corporation.

In the latter part of 1931 a Multiclone type dust collector, manufactured by the Western Precipitation Company, was installed at the Security plant between the waste heat boiler fans and the Cottrell precipitator, which had been installed the previous year. The Multiclone collector separates the bulk of the dust carried in the kiln gases, permitting the potash fumes together with a small percentage of dust to pass along to the precipitator. Here the potash is recovered, producing a material averaging 25 to 30 per cent of water-soluble K_2O, which is then shipped and sold to fertilizer manufacturers for use in the production of their standard mixtures.

The operating costs and the material recovered are such as to approximate very closely the production of a "costless by-product." Similar installations can be successfully operated for this purpose in any cement mill in which the raw materials contain an appreciable percentage of potash. The raw material from the quarry at the Security plant has a K_2O content of approximately 1 per cent.

Oklahoma Plant Reopens

The Dewey Portland Cement Company plant at Dewey, Okla., reopened January 1, after having been shut down since September 1. Operations were begun on a low capacity basis to afford employment to 125 men practically through 1933, according to President D. D. Tyler.

Universal Atlas Plant Reopens After Year's Shutdown

After having been closed for more than a year, the Hannibal, Mo., plant of the Universal Atlas Cement Co. was to reopen on February 1.

Three hundred men were to begin work then, and an additional hundred are to start March 1.

Ohio State University Installs Air Separating Unit

The engineering experiment station of Ohio State University, Columbus, Ohio, has installed a laboratory-size air separator in its ceramic research laboratory.

The intention is to use this laboratory unit in investigations and tests involving the classifying of portland cement and of clay, feldspar, dolomite and other ceramic materials. The air separator unit, which was described in detail in an article in the November issue of the Cement Mill Edition of CONCRETE, pages 41-42, is manufactured by the Federal Pneumatic Systems, Inc., of Chicago.

Indiana Governor Halts Awards; Proposes State Plant

State manufacture of cement is being considered in Indiana as the result of increases of 40 to 50 cents per bbl. in base bids submitted to the state highway department.

The expenditure of nearly $3,000,000 for supplies, including cement, was halted when Governor McNutt called members of the highway commission to his office on January 18 and instructed them to stop all contract letting.

The governor pointed out that with the increasing scope of the Hawes-Cooper law prohibiting sale of prison-made products in competition with other goods, it has become necessary to find additional employment for prisoners. It was pointed out thousands of dollars would be saved by the state through manufacture of more than $2,000,000 annually of cement used on road construction, according to the *Chicago Herald Examiner.*

Manufacture would be undertaken at the state penal farm at Putnamville.

Highway commission members later announced they had voted to extend consideration of cement bids for thirty days and instructed the director of the commission to make emergency cement purchases as needed.

67 Per Cent Price Increase Arouses City Agent

Either prosperity is returning or someone is "jacking up" the cement market, Joseph V. Nicholson, city purchasing agent, decided recently when he discovered that bids on a 15,000-bbl. city order of cement had jumped 67 per cent over prices in 1931.

Nicholson announced he hoped impending prosperity explained the rise, but declared he would investigate nevertheless to determine whether a combination in restraint of trade existed among cement dealers.

Opening the bids of several cement distributors, he discovered the lowest offer was $1.82 a barrel, after deduction of discount for cash and rebates for bags returned, compared with $1.09 last year. Others ranged slightly above this bid.

Should the new high price prevail, the city will be forced to spend $10,000 more for its cement than it did a year ago, Nicholson said.—Milwaukee (Wis.) *Sentinel.*

Masonry Cement Is New Product of Hermitage Company

The Hermitage Portland Cement Co., Nashville, Tenn., has added masonry cement to its line of portland and quick-hardening products.

Semi-Annual Dividend Declared by Idaho Portland

The Idaho Portland Cement Co., with a plant near Pocatello, declared a semi-annual dividend on the preferred stock of $3.50 a share, payable January 15.

EDITORIAL

Facts for Governor McNutt

IT seems unbelievable that, in the face of past experience with state-owned cement plants, any responsible state government official could give serious consideration to the proposal to build such a plant in 1933.

Nevertheless, such a proposal has come from Governor McNutt, of Indiana. In a recent newspaper interview the governor expressed the belief that many thousands of dollars might be saved annually in the state highway department purchases of cement by building a state-owned plant at the penal farm near Putnamville, where convict labor would be employed. He ordered the highway commission to withhold the awarding of contracts for supplying cement until the question of a state-owned plant can be given further consideration.

Apparently the costly experience of the neighboring state of Michigan with a state-owned cement plant has made no impression on Governor McNutt. The state of Michigan formerly operated its own plant at Chelsea. The taxpayers still have the plant on their hands, though it has been closed down for more than two years. On June 6, 1931, the governor of Michigan signed a bill authorizing the state administrative board to sell the plant. The bill provided further that if the plant has not been sold by January 1, 1934, it shall be dismantled and the salvage and land shall be sold separately.

In the meantime the taxpayers of Michigan were required to pay deficits aggregating $750,000 during the seven years of state operation of the plant.

If the governor of Indiana really wants facts on state-owned cement plants, he can get them from Michigan. The parallel is perfect, for the Michigan plant employed convict labor, as Governor McNutt proposes to do.

He can get additional facts from South Dakota, the only state that is now actually operating a cement plant. Convict labor is employed. Each year the state auditor has given out figures claiming profits from the operation of this plant. Now, as pointed out in an article in this issue, a leading newspaper of the state has dug into the records and has disclosed that the plant has actually accumulated a large deficit in the twelve years of its operation. A similar conclusion was reached in an article in the Cement Mill Edition of "Concrete" in the issue of May, 1931.

No one has questioned the ability of the cement men in charge of the operation of these two state plants; but in spite of the use of convict labor, the immunity from taxes and selling expenses, and other financial advantages, state-owned industrial ventures of this character can not be a financial success. Public business enterprises can not be conducted on an efficient basis.

Governor McNutt can perform a distinct service to the taxpayers of Indiana if he keeps the state out of the cement manufacturing business.

To Stop Dumping of Foreign Cement

REFERENCE was made in an editorial in last month's issue to the bill introduced in Congress by Representative Samuel B. Hill, designed to stop the dumping of foreign cement and other commodities from countries having depreciated currencies.

Mr. Hill has now prepared a new bill, which he introduced on January 3 as H. R. 13999, providing, as before, for an additional tax on imports from such countries, the amount of the tax to be in proportion to the percentage of currency depreciation.

The need for a bill of this character is well demonstrated in a newspaper article by Merwin H. Browne, sent out as a North American Newspaper Alliance dispatch. In and around New York City he found relief construction projects under way—projects which had been ordered solely as a means of providing employment—on which British cement was being used. Shocking as this disclosure seems, similar practices will continue as long as foreign cement is allowed to flood our seacoast markets and to be sold at prices below the cost of manufacturing and distributing American-made cement.

The technical nature of the problem created by depreciated currencies has delayed a general understanding of its importance. Gradually its significance is being grasped by business men and by members of Congress. On January 25 a caucus of the Republican members of the House voted in favor of supporting an additional tax of the kind proposed in the Hill bill.

Nevertheless, strong support will be needed if this measure is to be adopted. It is being attacked as a proposal to increase tariff rates, when in fact it would only restore tariff rates on imports from countries having depreciated currencies, to the levels intended to prevail under the present tariff law. It would not affect tariff rates on imports from countries which have maintained their currencies on a gold basis.

The cement industry is one of many industries that have a direct interest in the adoption of the Hill bill.

New Pumping Equipment Conveys Bulk Cement at Low Cost

Power Consumption of New Fuller-Kinyon Unit About Half That of Older Type—Operates Under Much Lower Air Pressure

THE cement industry has found many uses for the Fuller-Kinyon pumping system, not only in operations at the manufacturing plant, but also in the loading and unloading of bulk cement in connection with the transportation of cement to storage terminals and to customers using the product in bulk form.

Used in Manufacturing and Shipping Operations

In manufacturing operations alone, cement manufacturers have long used this form of equipment for conveying pulverized coal to the kilns, and for conveying the finished cement to the storage bins.

In shipping operations the pump equipment is again used for recovering cement from the storage bins and loading bulk cement cars or barges, for pumping the product from cars or barges into storage terminals at distributing centers, and for related purposes.

New Pump Uses Much Less Power

Because of the very general use of this pumping equipment in the industry, it will be a matter of direct interest to cement men to learn that the manufacturers have developed a new unit, known as Type F, which operates under much lower air pressure than the older units. As a direct result of the lower air pressure and the other improvements made, the new pump has a power consumption scarcely more than half that of the older installations.

Construction of New Pump

Prominent among the points of difference between the new Type F pump and the older Fuller-Kinyon stationary type is the much shorter barrel, formed as an integral unit with the hopper. Other essential points of difference are the overhung impeller screw and the externally adjustable seal in the new unit.

The screw shaft is supported for rotation in a unitary bearing support at the rear of the hopper, and adequate dust-sealing devices protect these bearings. The screw shaft bearing assembly is permanently aligned by means of a bushing which surrounds the shaft. The screw is readily removable by freeing the motor coupling, displacing the transport line connection at the discharge end of the pump, then pulling the screw forward.

The seal of the pump is externally adjustable by a

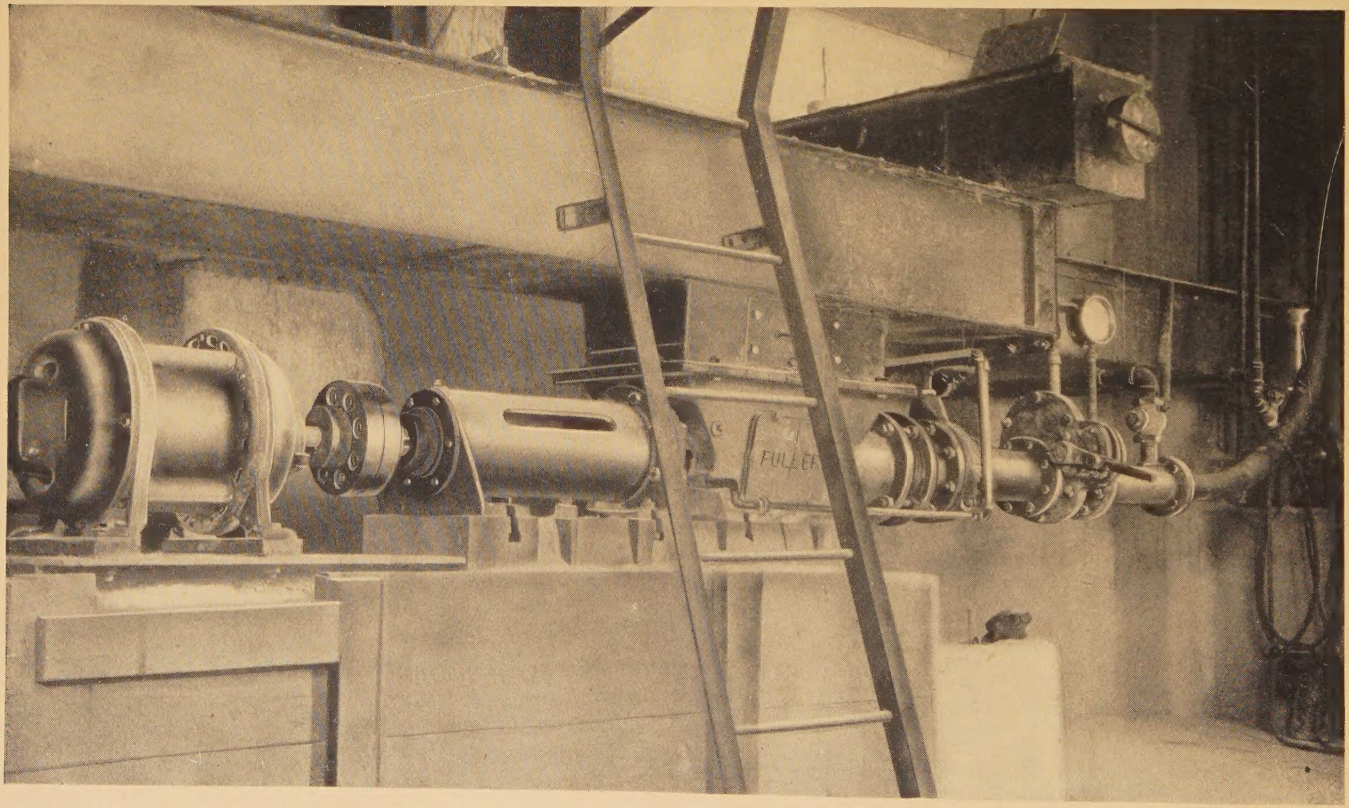


Figure 1. New Fuller-Kinyon pump replaces older unit in eastern cement plant because of lower power consumption

longitudinally movable liner bushing, which carries the air ring assembly. Thus the pump may be readily adjusted from the outside, and while in motion, to obtain the best operating efficiency.

Due to the low air pressure used in operating the new pump, ranging from 10 to 20 lb. for the average installations, and due further to the use of special alloys which protect the working parts of the pump, mechanical wear from the product being conveyed has been found to be negligible.

Still another useful feature of this new unit is the pump hopper, which has been designed so as to reduce the possibility of damage by tramp iron or other foreign material in the cement.

Installing the Unit

For permanent installations the pump and its driving motor are usually erected on a simple concrete foundation. For temporary set-ups, as for unloading bulk cement at construction projects, the pump and the motor are mounted on the same base. The pipe line, as with other types of Fuller-Kinyon pumps, may be buried under ground or suspended on hangers to avoid interference with buildings and other equipment.

The large illustration (Figure 1) is an excellent view of the new Type F pump, as installed in an eastern cement plant. This new unit replaced an older type of Fuller-Kinyon pump which was still in good operating condition; but because of the greatly reduced power consumption of the new unit, the plant management considered it good economy to scrap the old installation.

Unloading Hopper-Bottom Cars

The recent introduction, by several railways, of covered hopper-bottom cars for the transportation of bulk cement lends interest to the use of the new Type F Fuller-Kinyon pump in receiving and conveying cement from railway cars of this type.

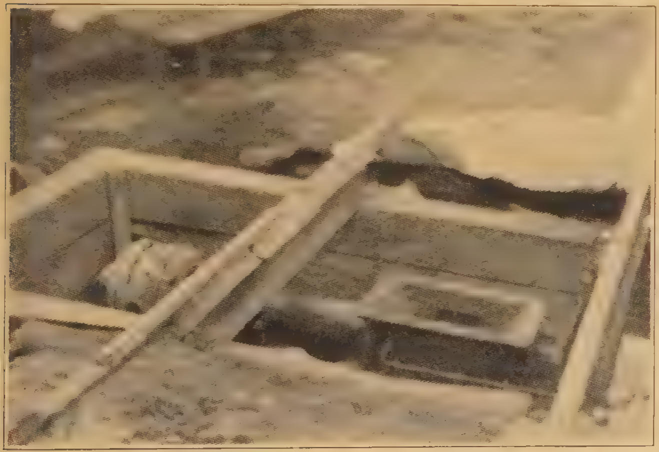


Figure 2. New pump unit installed under track to receive cement from railway hopper or tank cars

The hopper-bottom cars, which were described in detail in an illustrated article in the July (1932) issue of the *Cement Mill Edition* of CONCRETE, are unloaded by gravity.

A track installation of the pumping unit is shown in Figure 2, while Figure 3 shows the unit as installed in a typical case. As these two illustrations show, the pumping unit is installed beneath the tracks, in a small pit walled in with railroad ties or concrete.

The pump hopper is, of course, located on the center line between rails so as to receive the cement from the discharge gates of the railway car. The connection between the discharge gates and the pump hopper is made through dust-tight canvas spouts, the arrangement being similar to the flexible connections between weigh bins and pumps in cement mill service. The pump is direct-connected to the electric motor shown in Figure 2. A gasoline engine would be connected in a similar manner. The cement is, of course, pumped directly to the storage bins or tanks, through the pipe line installed for the purpose.

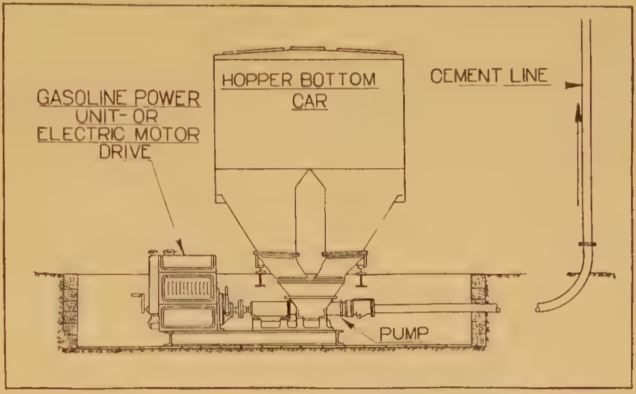


Figure 3. Details of track installation shown in Figure 2

Receiving Cement from Tank Cars

The receiving installation just described is identical with the track installation necessary for receiving bulk cement from self-unloading tank cars of the type described and illustrated in the May (1932) issue of the *Cement Mill Edition* of CONCRETE.

It will be seen that this new pump unit may play an important part in the cement industry's operations, not only in handling cement and pulverized coal at cement mills, but in the commercial transportation of bulk cement.

Lone Star Official Shows Results of Gasoline Tax Diversion

Statement Is Good Object Lesson on How to Reach and Inform the Public

(From the Brazil, Indiana, Daily Times, Jan. 11, 1933)

The extent of employment at the big Limedale cement mill during 1933 depends largely on what the legislature decides to do with the money paid in by motorists, in gas taxes and license fees, according to G. E. Pierson, vice-president of the Lone Star Cement Company, Indiana, Incorporated.

Proposals have been made, Mr. Pierson pointed out, to use this money for purposes far removed from road building. Workmen dependent on road building and its allied industries, including the cement industry, will bear the brunt of this diversion; the greater the diversion the less work there will be for thousands of workers.

"If the legislature adopts proposed measures diverting gas tax and license money to the general budget, jobs will be fewer by thousands on the roads, in quarries, gravel pits, cement mills, and in many other lines," Mr. Pierson declared. "Industries which hoped to increase their production and their pay rolls during 1933 will be forced to curtail still further. Few cement plants, I know, will be fortunate enough to continue even their present low rate of operation.

"Communities which depend on these industries will be hard hit. With the buying power of workers reduced, local business must suffer. I hope that every business man will voice his objection to diversion of highway funds.

"Motorists, too, should protest this misuse of highway money. Gasoline taxes and motor license fees were levied with the understanding that they would be used for road improvement only. They were intended as a toll for road usage, so that road costs would be borne by those who use the highways. As such they are fair, but the proceeds should not be used to pay general expenses, toward which everybody should contribute," Mr. Pierson concluded.

State Business Ventures Under Fire

Taxpayers Demand Halt on State Government Activities in Business—Legislature to Investigate—Profits Claimed for Cement Plant Are Questioned

AT least five of South Dakota's ten state business enterprises may find their affairs investigated by an economy-bent legislature during the next two months.

With adverse economic conditions affecting public as well as private business, taxpayers' organizations, economy groups and individual legislators are showing special interest these days in the question of whether some of the state enterprises are worth while.

Opponents of state competition with private business are taking advantage of the economy arguments to renew their demands for abolition of what they regard as unwise governmental activities. Supporters of the state enterprises are preparing to fight to retain them.

The rural credit enterprise, of course, heads the list of state business ventures which will receive legislative attention. But this department is already in the process of liquidation, and the chief problem it presents is how to raise money to meet maturing obligations.

Supply Depot in Spotlight

Several other state enterprises, including the hail insurance and bonding departments, the state coal mine, and state highway supply depot, have been objects of attack from groups of individuals during the last few weeks. Abolition of some or all of them is reported to be under consideration by democratic leaders who will control the legislature.

Another state enterprise sure to cause controversy is the state coal mine in Adams County, North Dakota. For several years it has been criticized as a losing venture, but its supporters contend it has repaid the taxpayers by producing lower prices. The 1931 legislature authorized its sale by Governor Green, but this has not been accomplished.

Claim Cement Plant Profit

The Davison County Taxpayers' Association and others have advocated closing of the state highway supply depot at Mitchell. Operations of this enterprise, organized to deal in road construction materials, have been defended by its manager, who claims it saved the state money.

Other state enterprises, which have thus far avoided general public demands for their abolition, include the state cement plant at Rapid City, the twine and license plate factories at the penitentiary, Custer state park, and the state fair at Huron.

The cement plant, because it has been able to build up a sinking fund for retirement of its bonds, has been proclaimed a success by its advocates. Its opponents, however, say that it may run into difficulties if highway construction in the state is cut down and the plant's chief market for cement is thus curtailed.

The foregoing observations on state-owned business enterprises, taken from the Vermilion (S. D.) *Republican*, indicate, at least by inference, that the state cement plant has been a financial success. However, a somewhat different light is thrown on that question in an editorial headed "Our Cement Plant," published in the Sioux Falls (S. D.) *Argus-Leader* of January 8. While recognizing that this cement plant has able management, the editorial points out that the amount paid by the state in interest on the cement plant bonds in 12 years is $1,232,400, while the payments made to the state by the cement plant in the same 12-year period amount to $900,000. The editorial then continues:

> Thus it appears that the returns from the plant have been more than $300,000 below the amount required for interest on its bonds.
>
> The taxpayers, in fact, have been called upon to pay regularly into the fund being built up to retire the plant's bonds.
>
> Strong advocates of state socialism may contend, however, that the plant has forced down the price of cement in South Dakota and that the advantages gained thereby justify its existence. We recall a year ago when the cement price warfare began in the east that South Dakota was not among the first states to be reached by it. Prices had been reduced in Illinois and eastern Iowa some time before they were lowered here. In fact, the first reductions in Sioux Falls came from the private makers of cement in other states and not from South Dakota's cement plant.
>
> When the record is completed we will probably learn that the cement plant has been a source of expense to the

taxpayers with no compensating advantages. The plant, we grant, is managed by able men but they cannot overcome certain fundamental disadvantages in any state-owned venture.

Along with the coal mine, rural credits, the hail insurance and the bonding departments, the cement plant is a relic of those days when South Dakota worshipped too much at the altar of state socialism. If we can receive a decent bid from a private source for the cement plant, we should sell it.

Limestone Explorations Treated in Bulletin of California Mining Bureau

How Soil and Vegetation May Indicate Character of Underlying Rock—Industrial Importance of Some California Limestones

Prospectors for limestone will find much of interest in two authoritative papers on that fascinating subject, just published in the January issue of *Mining in California*, a quarterly bulletin issued by the California State Mining Bureau. Abstracts of the two papers follow:

Limestone Weathering; Its Results and Products. By Junea W. Kelly. (Abstract of paper in January, 1933, issue of *Mining in California*, issued by California State Mining Bureau, Ferry Building, San Francisco. Original paper contains some six pages, several cross-sections and photographs. It should be of service to prospectors for limestone anywhere, though it is nominally limited to consideration of local California limestones.)

The author distinguishes between the chemical decay of limestone and its mechanical or physical disintegration, and describes the character and chemical composition of the residual products in the two cases. Emphasis is laid on the fact that when a limestone deposit is attacked by chemical solution—as in most of our eastern and southern regions—the resulting residual material contains practically no lime, being normally, in fact, a lime-free clay. This fact is of direct interest as a guide in limestone prospecting; and in another way it interests the lime industry, since it explains why a limestone region often offers good markets for fertilizer lime.

Another phase of the matter is the character of vegetation supported by limestone residuals. Here the author incidentally calls attention to two facts of interest in the East and South, respectively—the association of the Red or Virginia Cedar with the pure low-magnesia limestone belts of the "Trenton" series in the Shenandoah Valley and its southern continuations to Alabama; and the curious fact, noted by a former state geologist of Alabama, that the long-leaf pine avoids the chalk exposures in the Alabama-Georgia country and appears only on sandy plateaus or islands within the chalk belt. This observation by Dr. Eugene Smith is obviously also a point of direct interest to limestone prospectors in that region.

In any region covered either by heavy residual soil or by vegetation, where the underlying rocks can not be directly observed and easily traced, time and field work can often be saved if relations can be established, as suggested in this paper, between the character of the residual material or of the vegetation and the character of the limestone which has given rise to both. Studies of this sort have therefore a very direct economic value, and might profitably be extended to cover the more important limestone regions elsewhere than in the special district covered by this first investigation.

* * *

Limestones of the San Francisco Region, California. By Edwin C. Eckel. (Abstract of paper appearing in January (1933) issue of *Mining in California*, a quarterly bulletin issued by California State Mining Bureau, Ferry Building, San Francisco. The original paper contains some twelve pages, forty analyses and a geologic map. It should be serviceable to anyone interested in the cement, lime, flux or chemical limestone resources of that region.)

California, contrary to a popular impression, is abundantly supplied with deposits of limestone, occurring in most of the industrial regions of the state. The total tonnages available are very large, comparable indeed with those of the better known eastern and middle states. Unlike the limestone beds of New York and Pennsylvania, however, those of California do not occur usually in extensive continuous belts, reaching scores or hundreds of miles across the country. They occur in large isolated masses, separated often by igneous rocks from the adjoining limestones. Prospecting must therefore be carefully controlled by geologic data.

In the central California region, commercially tributary to San Francisco and the other Bay cities, there are known and mapped very extensive tonnages of good limestone in several different geological formations. These range from very old limestones, largely crystalline, to later deposits of bedded siliceous limestones and to even more recent deposits of travertine and shell.

In order of their industrial importance these types may be conveniently grouped as follow:

I. Gavilan crystalline limestone: old limestone, probably of Carboniferous age or older, largely metamorphosed, usually very low in magnesia, excellent cement materials but less suitable for lime or chemical use because of their crystalline character and iron-alumina percentages. Occur as thick beds, 500 ft. or more in average thickness, often steeply dipping. Estimated total tonnage easily available in the San Francisco region is placed at more than one thousand million tons.

II. Calera siliceous limestone: limestone series 100 ft. or so in thickness occurring in rocks of Jurassic-Cretaceous age in several belts. Very pure low-magnesia limestone of itself, but associated and often interbedded with siliceous cherts layers and beds. Where this chert can be avoided or removed at low cost, the Calera limestone offers a cheap supply of good stone for most uses. Where the chert is too heavy, or too intimately mixed with the pure limestone, the Calera series will be of use only for concrete or other broken stone supply, for which it is well adapted and cheaply operated. Total tonnages available are very large, but Eckel estimates that less than one-tenth are really available for cement, lime or chemical uses, the remainder being too cherty for such utilization.

III. Tertiary and recent limestones: several series in later periods offer local and limited supplies of good limestone—ranging from bedded limestones in the Tertiary to recent travertine deposits and to modern shell deposits. All of these types have been used as cement material; the travertine and shell are being now so used. The total supplies are, however, not in such tonnages as are available in the Gavilan and Calera series, and for these and other reasons the recent stones offer less hope for future expansion than do the two older series.

Copies of the quarterly bulletin in which these two interesting papers appear should be obtained direct from the California State Mining Bureau, Ferry Building, San Francisco.

Marquette Company Acquires Coal Barge Fleet

The Marquette Cement Manufacturing Co. is acquiring a fleet of steel coal barges on the Ohio river to be used in transferring coal from Grand Tower, Mo., on the Mississippi down to their plant at Cape Girardeau, Mo., according to the *Barge Bulletin* of the Federal Barge Lines, Peoria, Ill.

◆ PERSONAL ◆

J. L. Crosthwait, manager of Compania de Cemento Portland "Landa," S. A., Puebla, Mexico, has left that organization, effective December 31, 1932.

J. B. Lewis, assistant general superintendent at the Universal Atlas plant at Buffington, Ind., was honored early in January at a dinner celebrating his completion of 25 years of service with the firm. He was presented with a 25-year service medal, the forty-second to be awarded at the plant.

Donald Wilson has been reappointed to the position of sales manager for the state of Maine by the North American Cement Company.

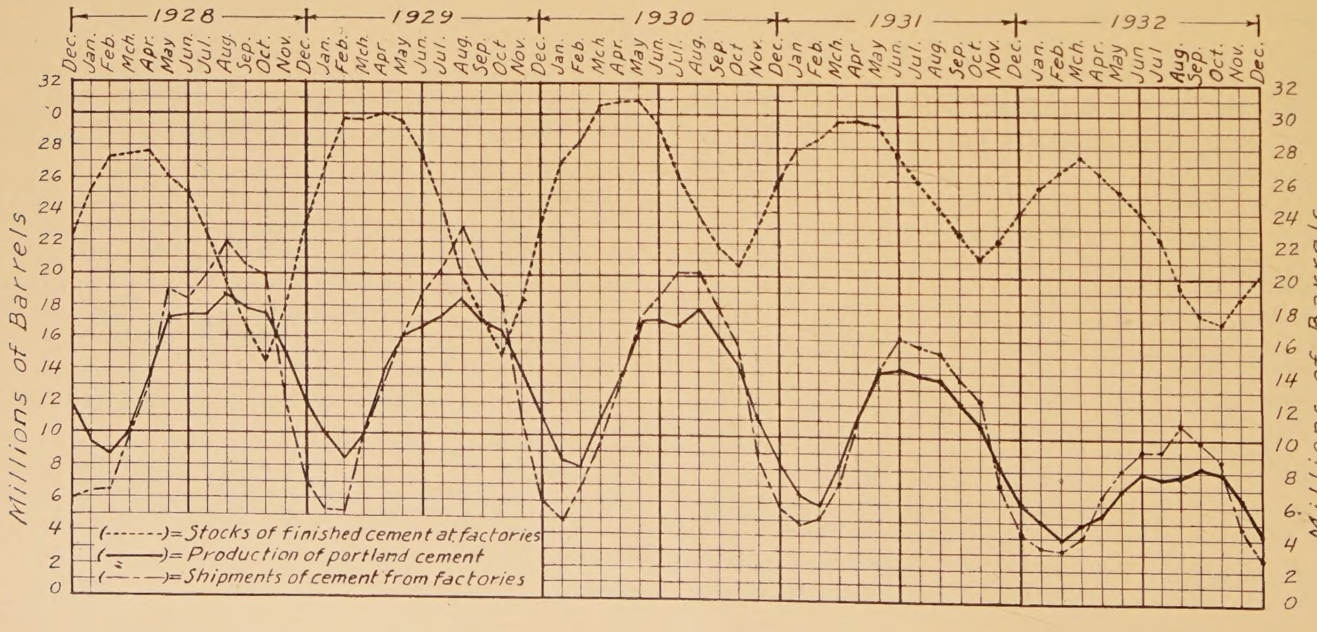
Cement Statistics for December

Relation of Production to Capacity (Per Cent)

	The Month	Twelve Months
December, 1932	18.5	28.3
December, 1931	26.4	46.5
November, 1932	29.1	29.0
October, 1932	34.6	29.6
September, 1932	36.9	30.6

Production, Shipments and Stocks of Finished Portland Cement (In Barrels)

	1931	1932
Production, December	5,974,000	4,248,000
Shipments, December	4,142,000	2,835,000
Stocks at end of month	24,177,000	20,200,000

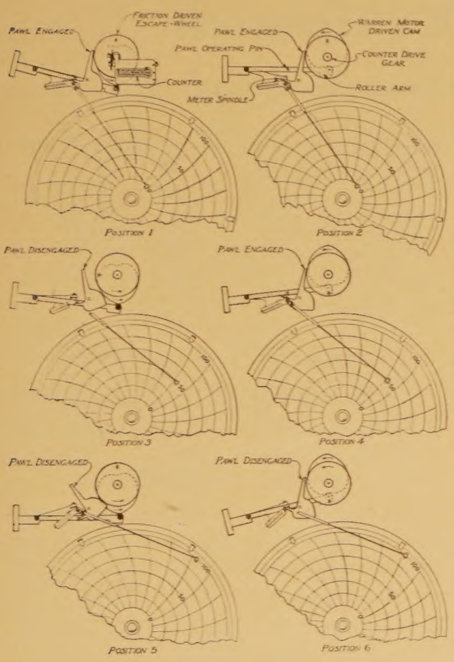


MILL EQUIPMENT

Escapement Type Integrator Is Bailey Development

The most outstanding development incorporated in the new line of Bailey fluid meters recently announced is the escapement type integrator, which operates in an exceedingly simple but accurate manner. The general appearance of this integrator is illustrated in the illustration of the meter interior.

A heart-shaped cam, which has a uniform angular rise, is geared to a Warren synchronous motor and rotated at the rate of two revolutions per minute. By means of a friction clutch between the cam and the escape wheel, the motor also drives the escape wheel and integrator counter at constant speed when the pawl is not engaged. When the pawl engages with the escape wheel the integrator counter is held stationary, but the friction clutch allows the cam to continue rotation.



The roller arm is pivoted near its left end to the flow mechanism, so that the position of the pivot varies only with changes in the rate of flow. The right end of the roller arm moves up and down under the action of the rotating cam, causing the pawl operating pin to move up and down also. It is this operating pin which is responsible for engagement and disengagement of the pawl with the escape wheel.

Referring to the illustration, Positions 1 and 2 show the flow recorder at zero rate of flow. In Position 1, the cam and roller are at maximum throw, while in Position 2 they are at the point of minimum throw. In both of these zero rate of flow positions, which represent extreme cam positions, the integrator counter is stationary because the path of the pawl operating pin does not come sufficiently low to disengage the pawl.

Positions 3 and 4 also show the cam and roller in their extreme positions, but the flow recorder is now at 50 per cent of maximum capacity. The increase in rate of flow has resulted in lowering the left end of the roller arm, thus lowering the path traveled by the operating pin. Consequently, during 180 deg. rotation of the cam, the pawl remains engaged with the escape wheel, but during the remaining 180 deg. rotation, it is kept disengaged by the pin. Under these conditions, the integrator runs 50 per cent of the time, which is correct when the rate of flow is at 50 per cent of maximum.

Positions 5 and 6 show the cam and roller in similar positions, but with the rate of flow increased to 100 per cent. Under these conditions the pawl operating pin keeps the pawl disengaged during 360 deg. rotation of the cam. Conseqently, the integrator runs continuously.

This escapement type integrator has proved to be very accurate, since its operation is governed by the rate of flow at each engagement and disengagement of the pawl, it is stated. Since the pawl engages and disengages during each revolution of the cam for all rates of flow between 0 and 100 per cent, the integrator total is adjusted to the prevailing rate of flow four times each minute, instead of only once per minute as is customary in the ordinary type of periodic integrator.

Splash-Proof Motor New Louis Allis Unit

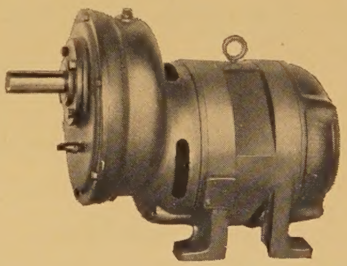
Built to prevent the entrance of water splashed with terrific pressure from any angle, yet sufficiently ventilated and built in the same dimensions as standard open units, a splash-proof motor has been perfected by the Louis Allis Co., Milwaukee.

A double baffle in an elliptical-shaped air passage in each endbell provides the remarkable protection offered by this new motor. This construction, while permitting free passage of ventilating air, traps and drains water splashed into the air openings at the bottom of the elliptical-shaped chambers. Another original feature is a shaft guard which breaks the force of a stream directed along the shaft extension and prevents water from entering the bearing chamber.

Motorized Special Reducer New James Unit

Speed reducer and motor combined as a single unit is announced by the D. O. James Manufacturing Co., Chicago.

These units are available from ½ to 20 hp. with a wide range of ratios and speeds. The gears are of the continuous tooth herringbone construction mounted on anti-friction bearings, running in a bath of oil, making a compact, efficient and space-saving drive of great emergency strength, according to the James Co.



Enclosed Air Circuit Breakers in New Line

A new line of manually and electrically operated, trip-free, multi-pole air circuit breakers for the control and protection of circuits in all fields has been announced by the General Electric Company. These breakers, designated as Type AB-2, are obtainable in metal-enclosed construction, with or without pull box, metal-enclosed with pull box and disconnecting devices to permit inspection of the breaker while it is disconnected from the source, or mounted in dead-front and metal-enclosed switchboards which are shipped assembled from the factory.

The ratings of this new apparatus range from 15 to 400 amperes, 250 volts d.c., and 600 volts a.c. This type of breaker has high interrupting capacity because when the breaker opens, the circuit is transferred from main contacts to intermediate contacts and then to arcing horns by the rapid action of a magnetic blowout.

Two independent overcurrent tripping devices are included: a thermal inverse time trip and an instantaneous magnetic trip, which operates instantly on approximately ten times the normal current.

This new switching equipment is constructed with a back-connected, base-mounted air circuit breaker enclosed in a metal box with a hinged cover provided with a breaker position-indicator and an operating handle for opening and closing the breaker. This construction affords dead-front operation of the breaker with freedom from live parts. Barriers of insulating material prevent possible arcing to metal enclosures.

New Purox Welding Torch Announced by Linde

The Linde Air Products Company, New York, N. Y., has announced the addition of a new welding torch to its Purox line of oxy-acetylene apparatus. Designated as the Purox No. 28 welding torch, this new torch has the same wide range of usefulness and the same high efficiency and economical gas consumption as the Purox No. 20 torch, but is somewhat different in design. Its utility is such that it will handle heavy duty work as easily as the average, it is stated.

Ten one-piece, 60 deg. goose-neck tips, numbered from 6 to 15, are available for use with this torch. They are well built, with plenty of hard-drawn copper stock to withstand the intense reflected heat of the heaviest welding job. By means of a union nut these tips may be adjusted so as to point in any direction. Thus, overhead or vertical welding can be accomplished without any change in the normal grip of the torch handle.

Tips Nos. 6, 8, 10, 12, and 14 are furnished with the torch, giving it a range from 16 gauge sheet up to heavy castings. By using the Purox No. 21 cutting attachment with this torch, steel up to 2 in. in thickness can be cut.

The Purox No. 28-B welding torch is the same as the Purox No. 28 welding torch except that it is supplied with tips Nos. 6, 8 and 10, mixer No. 6-10, friction lighter and wrench.

By means of an adaptor Purox No. 11 welding torch tips can be used on both the Purox No. 28 and No. 28-B torches. This provides a convenient and economical means of increasing the range of usefulness of the Purox No. 28 welding torch in the lighter welding field. This feature is particularly useful in that it obviates investment in an additional small torch when there is only occasional need for light welding.

About the Manufacturers of Equipment

Field Activities

Tulsa Office; Mill Representative

The Babcock and Wilcox Tube Co., Beaver Falls, Pa., announces the opening of a district office in Tulsa, Okla., at 2002 Philtower Building, under the direction of *Carl J. Hochenauer.*

Mr. Hochenauer has had broad experience in the sale of tubular products to the oil producing and refining industries over a period of 15 years as general manager of the Interstate Pipe Co., Pittsburgh, Pa., and as manager, steel coupling division, A. O. Smith Corp., Milwaukee, Wis.

In order to give *A. M. Castle & Co.*, its West Coast agent, the assistance of a local direct mill representative, the Babcock & Wilcox Tube Co. has appointed *Fritz Hoving* its West Coast district sales manager. Mr. Hoving will make his headquarters with A. M. Castle & Co. at 2200-2360 East 55th Street, Los Angeles, Calif., and will maintain active touch with the offices of that company in San Francisco and Seattle.

E. M. Herr Passes Away

Edwin M. Herr, 72, who rose from a messenger boy to direct one of the biggest industries in the country, doing an annual business of $200,000,000 and employing thousands of men, died December 24 at his home at New York City. At the time of his death Mr. Herr was vice-chairman of the board of directors of the Westinghouse Electric and Manufacturing Co. and a director of numerous other organizations.

For many years he was a resident of Pittsburgh, where he was president of the Westinghouse Electric and Manufacturing Co., and during the 18 years of incumbency as president of the company, its annual sales increased from $20,000,000 to ten times that figure. He relinquished the presidency of the company in 1929 to become vice-chairman of the board of directors.

Re-elected Association Chairman

J. H. Connors, vice-president and general manager of the *B. F. Goodrich Co.* mechanical goods division, has been re-elected by acclamation to serve a second term as chairman of the mechanical goods division of the Rubber Manufacturers Association.

Mr. Connors has been identified with Goodrich mechanical goods activities for more than 20 years.

Brown District Manager

O. B. Wilson, formerly manager of the Cleveland, Ohio, office of the *Brown Instrument Co.*, has been appointed district manager of the territory comprising Texas, Louisiana and southern Arkansas, with headquarters at Houston, Texas.

Poole Foundry Representatives

The Poole Foundry & Machine Co., Woodberry, Baltimore, Md., has appointed the *Rockfield-Davis Equipment Co.* at Denver, Colo., as its representatives in the states of Colorado, Wyoming and New Mexico. A complete line of Poole flexible couplings is carried in stock.

The same firm has appointed *Frank M. Esch*, P. O. Box 742, Houston, Texas, as direct representative for the Poole line of flexible couplings and reduction gears in the state of Texas.

Industrial Literature

Rubber Protection

A 4-page insert for its mechanical goods catalog on the subject of *Armorite* has just been published by the *B. F. Goodrich Rubber Company*, Akron, Ohio.

Armorite, a soft, elastic black rubber, is used as a protection to other surfaces from abrasion of wet or dry materials. It is described as a compound of phenomenal tensile strength and capacity to resist wear.

Among its uses are: for chutes, hoppers, and other wearing surfaces handling crushed stone, impellers for flotation work, cyclone collectors and fan housings for abrasive dusts, and dredge pump liners.

Copies of the insert are available on request to the manufacturer.

New, Sensitive Recorder

Extreme sensitivity characterizes the new *G-E photoelectric recorder*, and it gives, according to the *General Electric Co.*, Schenectady, N. Y., a graphic record of quantities that never before could be recorded, except in the laboratory.

This device is described in *Bulletin GEA*-1480*B*.